CLAIMS

What is claimed is:

1   A non-recursive filter for receiving samples and generating a filtered

2   signal, said filter comprising:

3   at least one input for receiving said samples;

4   a plurality of summation units, each of said summation units comprising:

5   at least one multiplier directly connected to said input, said

6   multiplier multiplying said samples and providing multiplied samples; and

7   at least one adder connected to said multiplier, said adder adding

8   said multiplied samples and providing added samples; and

9   a plurality of delay elements positioned between said summation units,

10 said delay elements receiving said added samples and providing a delayed output

11 of said added samples to a successive summation unit of said summation units.

1   2. The non-recursive filter in claim 1, wherein each of said delay elements is

2   connected to an adder of said successive partial summation unit.

3.   The non-recursive filter in claim 1, further comprising an initial delay element connected to an initial multiplier, said initial delay unit supplying an initial delayed sample to an adder of an initial summation unit.

4.   The non-recursive filter in claim 1, wherein said multiplier receives said samples in an undelayed state.

5.   The non-recursive filter in claim 1, wherein each of said summation units includes two of said multipliers supplying said multiplied sample to a single adder.

6.   The non-recursive filter in claim 5, wherein said non-recursive filter comprises an interleaved non-recursive filter receiving odd and even samples and said single adder receives an odd multiplied sample from one multiplier and an even multiplied sample from a second multiplier.

7.   The non-recursive filter in claim 1, wherein said delay elements control said samples such that each of said adders receives at most two of said samples.

1   8.   A non-recursive filter for receiving samples and generating a filtered

2   signal, said filter comprising:

3   a plurality of successive partial summation units, each partial summation

4   unit having multiplier for multiplying an undelayed state of each of said samples,

5   and an adder for adding multiplied samples; and

6   a plurality of delay elements each coupled to said adder for receiving

7   added samples and for providing a delayed output of said added samples to a

8   successive partial summation unit.

1   9.   The non-recursive filter in claim 8, wherein each of said delay elements is

2   connected to an adder of said successive partial summation unit.

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1   10.   The non-recursive filter in claim 8, further comprising an initial delay

2   element connected to an initial multiplier, said initial delay unit supplying an

3   initial delayed sample to an adder of an initial summation unit.

1   11.   The non-recursive filter in claim 8, wherein said multiplier receives said

2   samples in an undelayed state.

1   12.   The non-recursive filter in claim 8, wherein each of said summation units

2   includes two of said multipliers supplying said multiplied sample to a single

3   adder.

1   13. The non-recursive filter in claim 12, wherein said non-recursive filter

2   ~~comprises an interleaved non-recursive filter receiving odd and even samples and~~

3   said single adder receives an odd multiplied sample from one multiplier and an

4   even multiplied sample from a second multiplier.

1   14.   The non-recursive filter in claim 8, wherein said delay elements control

2   said samples such that each of said adders receives at most two of said samples.

1   15. An interleaved non-recursive filter for receiving samples and generating a

2   filtered signal, said filter comprising:

3   at least one input for receiving said samples;

4   a plurality of multipliers directly connected to said input, said multipliers

5   multiplying said samples and providing multiplied samples;

6   a plurality of adders connected to said multiplier, said adders adding said

7   multiplied samples and providing added samples; and

8   a plurality of delay elements positioned between said adders, said delay

9   elements receiving said added samples and providing a delayed output of said

10 added samples to a successive adder of said adders.

1   16.   The interleaved non-recursive filter in claim 15, further comprising an
2   initial delay element connected to an initial multiplier, said initial delay unit
3   supplying an initial delayed sample to an initial adder.

1   17.   The interleaved non-recursive filter in claim 15, wherein said multipliers
2   receive said samples in an undelayed state.

1   18.   The interleaved non-recursive filter in claim 15, wherein two of said
2   multipliers supplies said multiplied sample to each of said adders.

1   The interleaved non-recursive filter in claim 18, wherein said samples
2   comprise odd and even samples and said single adder receives an odd multiplied
3   sample from one multiplier and an even multiplied sample from a second
4   multiplier.

1   20.   The interleaved non-recursive filter in claim 15, wherein said delay
2   elements control said samples such that each of said adders receives at most two
3   of said samples.

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